CLAIMS

1. A method of testing an acceleration sensor,

said acceleration sensor comprising:

a substrate arranged along a XY-plane of an XYZ three-dimensional coordinate system;

a working body receiving a force and located adjacent to said substrate with a predetermined distance;

a flexible member made of silicon supporting said working body at a periphery thereof so that said working body is suspended and spatial deviation of said working body is produced by applying said force thereto;

a fixing member fixing said flexible member to said substrate; and

a transducer for transforming said spatial deviation into an electric signal that indicates a direction and a magnitude of said force,

said method comprising the steps of:

providing a deviation electrode and a fixed electrode, said deviation electrode being located at a position which deviates along with said working body and said fixed electrode being fixed to said substrate so as to face said deviation electrode;

applying a voltage between said deviation electrode and said fixed electrode so that Coulomb force is produced which causes spatial deviation of said working body in an X-axis direction of said XYZ three-dimensional coordinate system;

detecting an electric signal transformed by said transducer while said spatial deviation is caused by applying said voltage; and

testing an operation of said acceleration sensor with respect to said

X-axis direction based on a relationship between said applied voltage and said detected electric signal.

2. A method of testing an acceleration sensor,

said acceleration sensor comprising:

a substrate arranged along an XY-plane of an XYZ three-dimensional coordinate system;

a working body receiving a force and located adjacent to said substrate with a predetermined distance;

a flexible member made of silicon supporting said working body at a periphery thereof so that said working body is suspended and spatial deviation of said working body is produced by applying said force thereto;

a fixing member fixing said flexible member to said substrate; and

a transducer for transforming said spatial deviation into an electric signal that indicates a direction and a magnitude of said force,

said method comprising the steps of:

providing a deviation electrode and a fixed electrode, said deviation electrode being located at a position which deviates along with said working body and said fixed electrode being fixed to said substrate so as to face said deviation electrode;

applying a voltage between said deviation electrode and said fixed electrode so that Coulomb force is produced which causes spatial deviation of said working body in a Z-axis direction of said XYZ three-dimensional coordinate system;

detecting an electric signal transformed by said transducer while

said spatial deviation is caused by applying said voltage; and

testing an operation of said acceleration sensor with respect to said Z-axis direction based on a relationship between said applied voltage and said detected electric signal.

3. A method of testing an acceleration sensor,

said acceleration sensor comprising:

a substrate arranged along an XY-plane of an XYZ three-dimensional coordinate system;

a working body receiving a force and located adjacent to said substrate with a predetermined distance;

a flexible member made of silicon supporting said working body at a periphery thereof so that said working body is suspended and spatial deviation of said working body is produced by applying said force thereto;

a fixing member fixing said flexible member to said substrate; and

a transducer for transforming said spatial deviation into an electric signal that indicates a direction and a magnitude of said force,

said method comprising the steps of:

providing a deviation electrode and a fixed electrode, said deviation electrode being located at a position which deviates along with said working body and said fixed electrode being fixed to said substrate so as to face said deviation electrode;

applying a first voltage between said deviation electrode and said fixed electrode so that Coulomb force is produced which causes first spatial deviation of

said working body in an X-axis direction of said XYZ three-dimensional coordinate system;

detecting a first electric signal transformed by said transducer while said first spatial deviation is caused by applying said first voltage;

testing a first operation of said acceleration sensor with respect to said X-axis direction based on a relationship between said applied first voltage and said detected first electric signal;

applying a second voltage between said deviation electrode and said fixed electrode so that Coulomb force is produced which causes second spatial deviation of said working body in a Z-axis direction of said XYZ three-dimensional coordinate system;

detecting a second electric signal transformed by said transducer while said second spatial deviation is caused by applying said second voltage; and

testing a second operation of said acceleration sensor with respect to said Z-axis direction based on a relationship between said applied second voltage and said detected second electric signal.

4. A method of testing an acceleration sensor,

said acceleration sensor comprising:

a substrate arranged along an XY-plane of an XYZ three-dimensional coordinate system;

a working body receiving a force and located adjacent to said substrate with a predetermined distance;

a flexible member made of silicon supporting said working body at

a periphery thereof so that said working body is suspended and spatial deviation of said working body is produced by applying said force thereto;

a fixing member fixing said flexible member to said substrate; and

a transducer for transforming said spatial deviation into an electric signal that indicates a direction and a magnitude of said force;

said method comprising the steps of:

providing a first deviation electrode and a first fixed electrode, said first deviation electrode being located at a position which deviates along with said working body and said first fixed electrode being fixed to said substrate so as to face said first deviation electrode;

providing a second deviation electrode and a second fixed electrode, said second deviation electrode being located at a position which deviates along with said working body and said second fixed electrode being fixed to said substrate so as to face said second deviation electrode;

applying a first voltage between said first deviation electrode and said first fixed electrode so that Coulomb force is produced which causes first spatial deviation of said working body in an X-axis direction of said XYZ three-dimensional coordinate system;

detecting a first electric signal transformed by said transducer while said first spatial deviation is caused by applying said first voltage;

testing a first operation of said acceleration sensor with respect to said X-axis direction based on a relationship between said applied first voltage and said detected first electric signal;

applying a second voltage between said second deviation electrode

and said second fixed electrode so that Coulomb force is produced which causes second spatial deviation of said working body in a Y-axis direction of said XYZ three-dimensional coordinate system;

detecting a second electric signal transformed by said transducer while said second spatial deviation is caused by applying said second voltage; and

testing a second operation of said acceleration sensor with respect to said Y-axis direction based on a relationship between said applied second voltage and said detected second electric signal.

5. A method of testing an acceleration sensor,

said acceleration sensor comprising:

a substrate arranged along an XY-plane of an XYZ three-dimensional coordinate system;

a working body receiving a force and located adjacent to said substrate with a predetermined distance;

a flexible member made of silicon supporting said working body at a periphery thereof so that said working body is suspended and spatial deviation of said working body is produced by applying said force thereto;

a fixing member fixing said flexible member to said substrate; and

a transducer for transforming said spatial deviation into an electric signal that indicates a direction and a magnitude of said forcel;

said method comprising the steps of:

providing a first deviation electrode and a first fixed electrode, said first deviation electrode being located at a position which deviates along with said

working body and said first fixed electrode being fixed to said substrate so as to face said first deviation electrode;

providing a second deviation electrode and a second fixed electrode, said second deviation electrode being located at a position which deviates along with said working body and said second fixed electrode being fixed to said substrate so as to face said second deviation electrode;

applying a first voltage between said first deviation electrode and said first fixed electrode so that Coulomb force is produced which causes first spatial deviation of said working body in an X-axis direction of said XYZ three-dimensional coordinate system;

detecting a first electric signal transformed by said transducer while said first spatial deviation is caused by applying said first voltage;

testing a first operation of said acceleration sensor with respect to said X-axis direction based on a relationship between said applied first voltage and said detected first electric signal;

applying a second voltage between said second deviation electrode and said second fixed electrode so that Coulomb force is produced which causes second spatial deviation of said working body in a Y-axis direction of said XYZ three-dimensional coordinate system;

detecting a second electric signal transformed by said transducer while said second spatial deviation is caused by applying said second voltage;

testing a second operation of said acceleration sensor with respect to said Y-axis direction based on a relationship between said applied second voltage and said detected second electric signal;

applying a third voltage between said first deviation electrode and said first fixed electrode so that Coulomb force is produced which causes third spatial deviation of said working body in a Z-axis direction of said XYZ three-dimensional coordinate system;

detecting a third electric signal transformed by said transducer while said third spatial deviation is caused by applying said third voltage; and

testing a third operation of said acceleration sensor with respect to said Z-axis direction based on a relationship between said applied third voltage and said detected third electric signal.

6. A method of testing an acceleration sensor,

said acceleration sensor comprising:

a substrate arranged along an XY-plane of an XYZ three-dimensional coordinate system;

a working body receiving a force and located adjacent to said substrate with a predetermined distance;

a flexible member made of silicon supporting said working body at a periphery thereof so that said working body is suspended and spatial deviation of said working body is produced by applying said force thereto;

a fixing member fixing said flexible member to said substrate; and

a transducer for transforming said spatial deviation into an electric signal that indicates a direction and a magnitude of said force;

said method comprising the steps of:

providing a first deviation electrode and a first fixed electrode, said

first deviation electrode being located at a position which deviates along with said working body and said first fixed electrode being fixed to said substrate so as to face said first deviation electrode;

providing a second deviation electrode and a second fixed electrode, said second deviation electrode being located at a position which deviates along with said working body and said second fixed electrode being fixed to said substrate so as to face said second deviation electrode;

applying a first voltage between said first deviation electrode and said first fixed electrode so that Coulomb force is produced which causes first spatial deviation of said working body in an X-axis direction of said XYZ three-dimensional coordinate system;

detecting a first electric signal transformed by said transducer while said first spatial deviation is caused by applying said first voltage;

testing a first operation of said acceleration sensor with respect to said X-axis direction based on a relationship between said applied first voltage and said detected first electric signal;

applying a second voltage between said second deviation electrode and said second fixed electrode so that Coulomb force is produced which causes second spatial deviation of said working body in a Y-axis direction of said XYZ three-dimensional coordinate system;

detecting a second electric signal transformed by said transducer while said second spatial deviation is caused by applying said second voltage;

testing a second operation of said acceleration sensor with respect to said Y-axis direction based on a relationship between said applied second voltage and

said detected second electric signal;

applying a third voltage between said first deviation electrode and said first fixed electrode and between said second deviation electrode and said second fixed electrode so that Coulomb force is produced which causes third spatial. deviation of said working body in a Z-axis direction of said XYZ three-dimensional coordinate system;

detecting a third electric signal transformed by said transducer while said third spatial deviation is caused by applying said third voltage; and

testing a third operation of said acceleration sensor with respect to said Z-axis direction based on a relationship between said applied third voltage and said detected third electric signal.